

Figure 1

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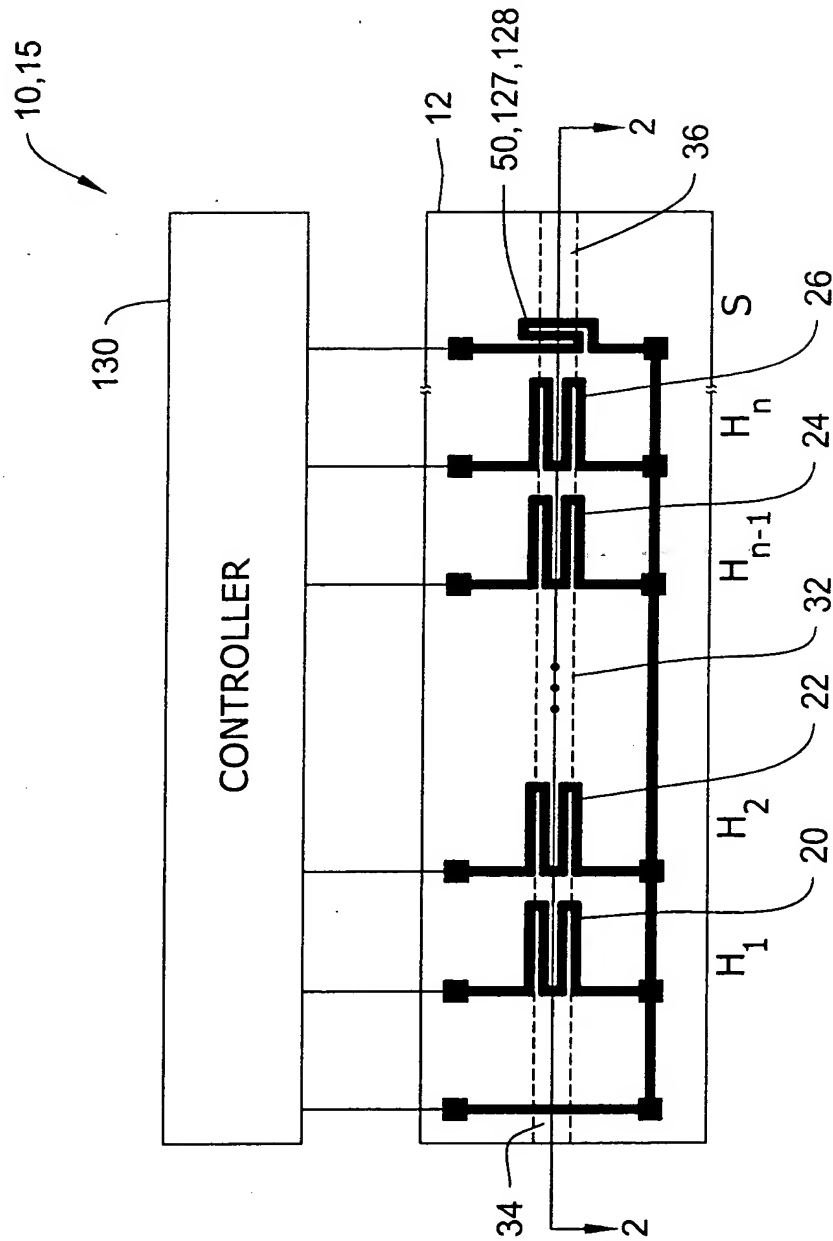


Figure 3

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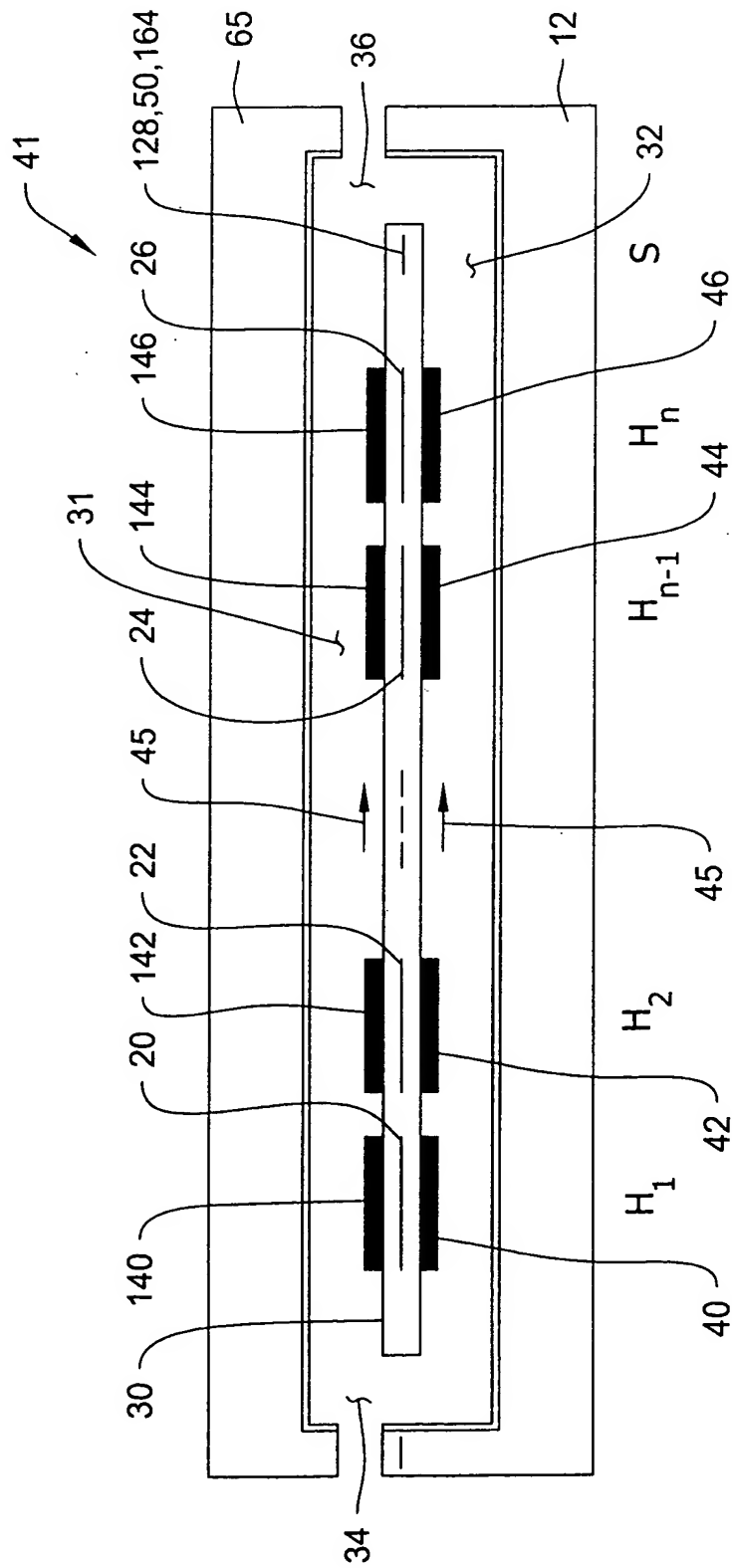


Figure 5

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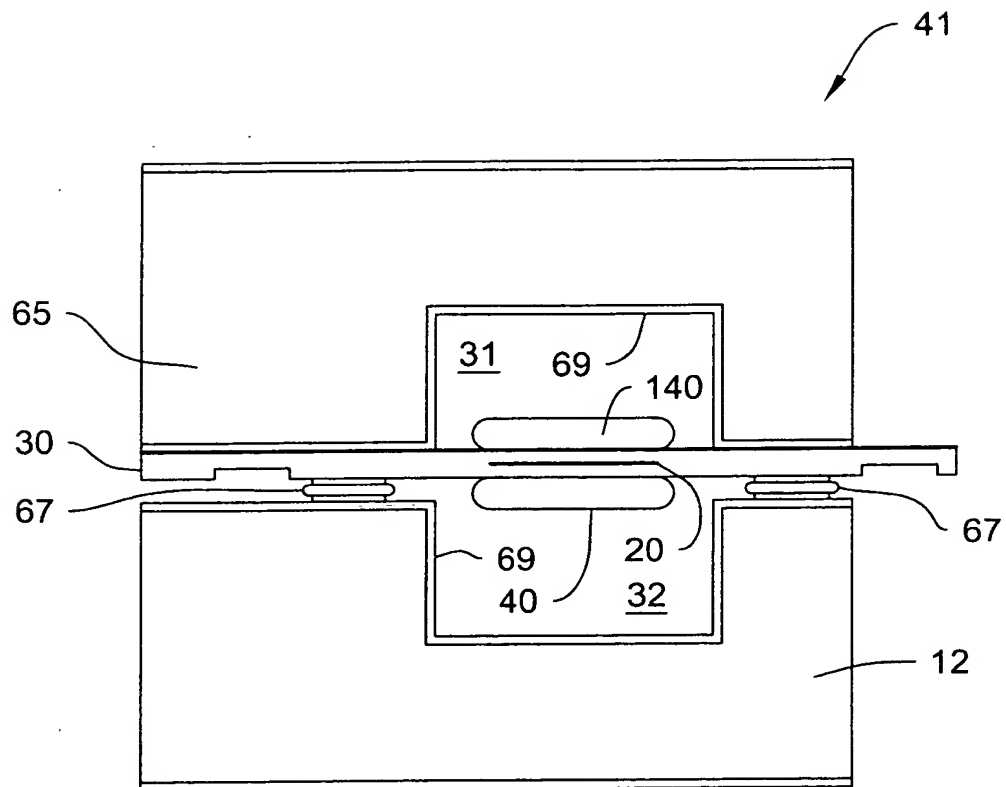


Figure 6A

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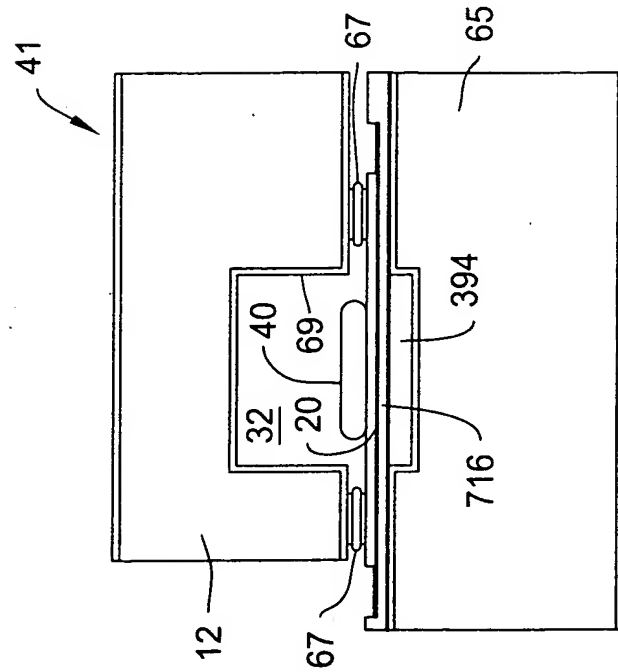


Figure 6C

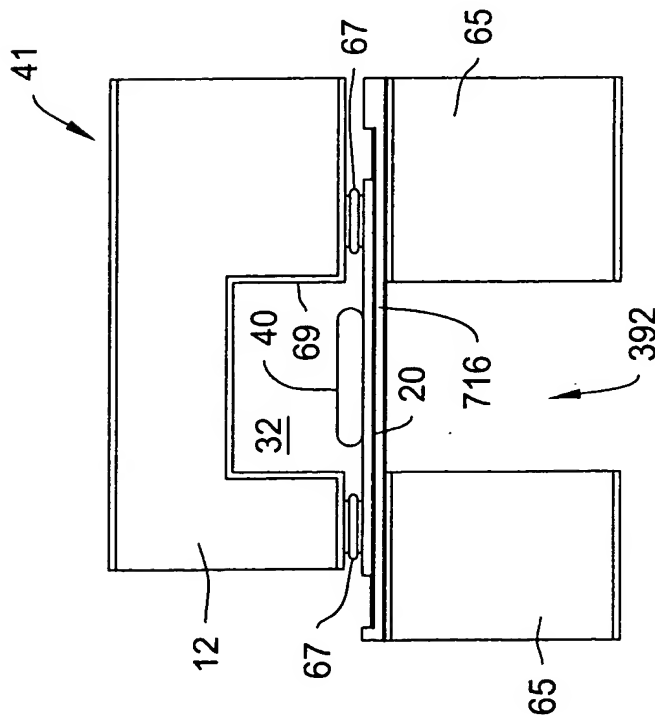


Figure 6B

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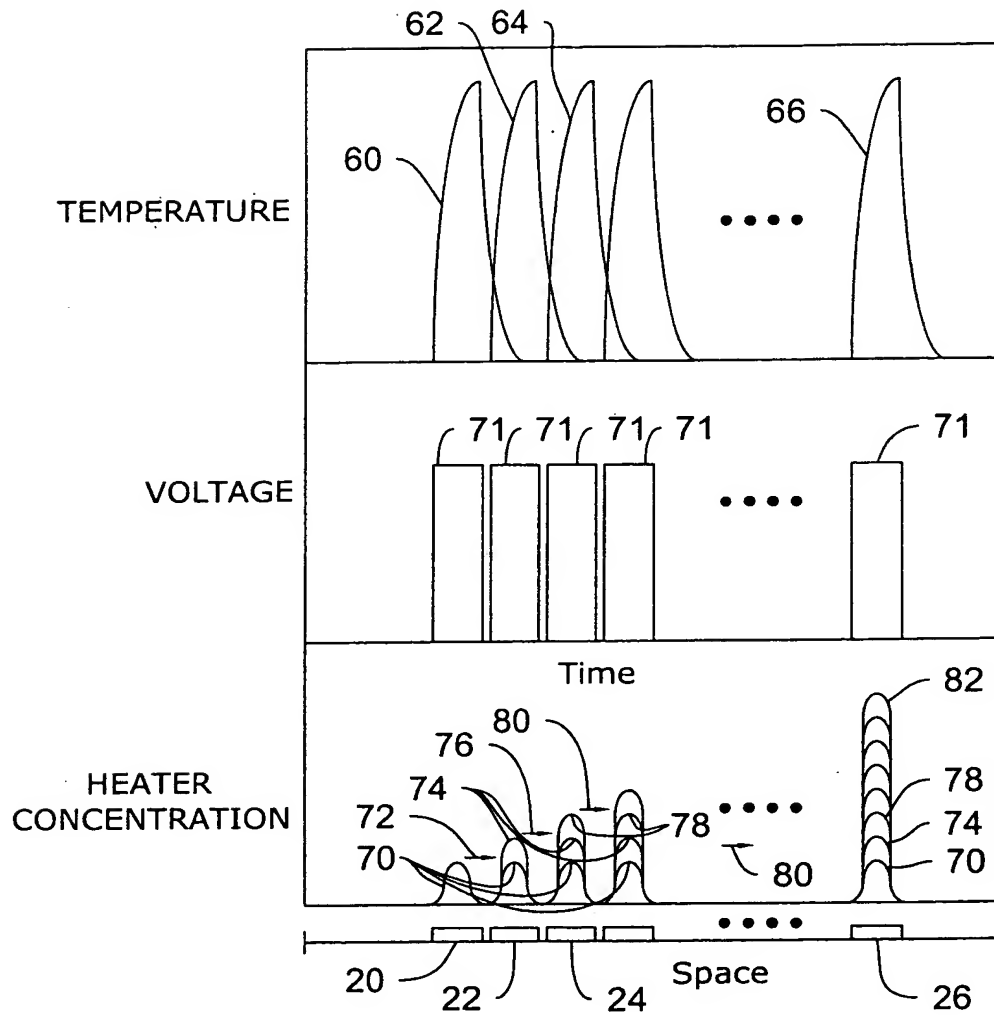


Figure 7

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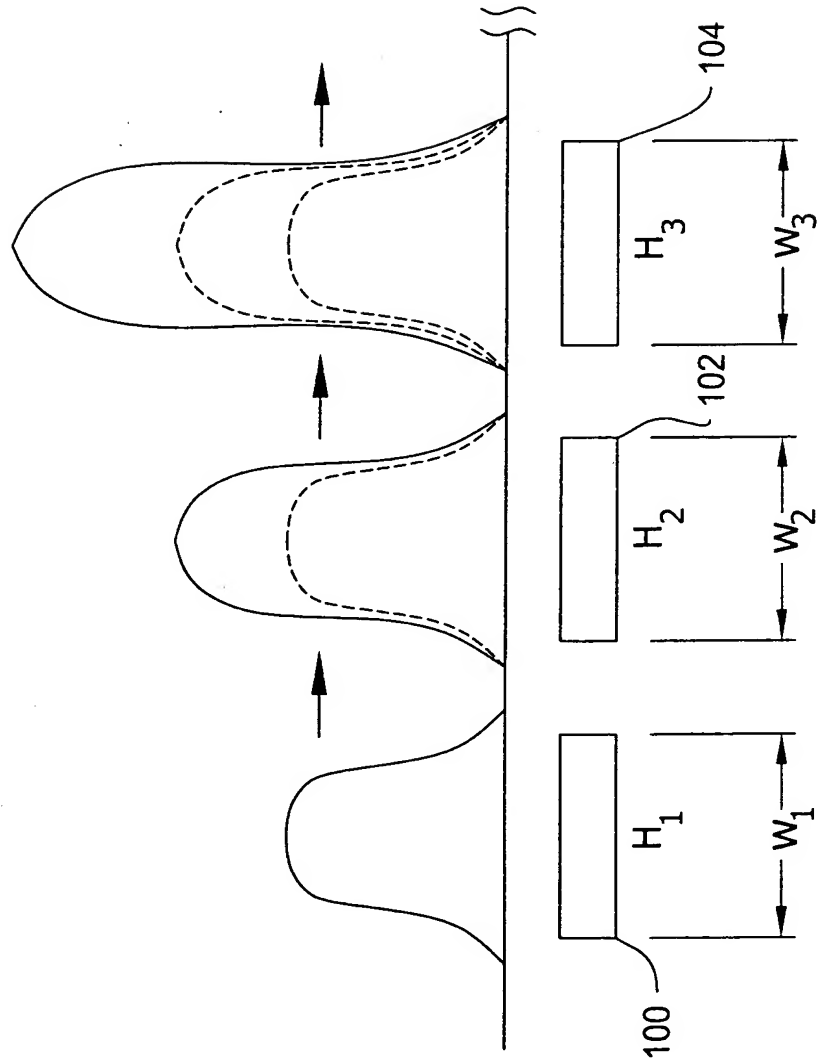


Figure 8

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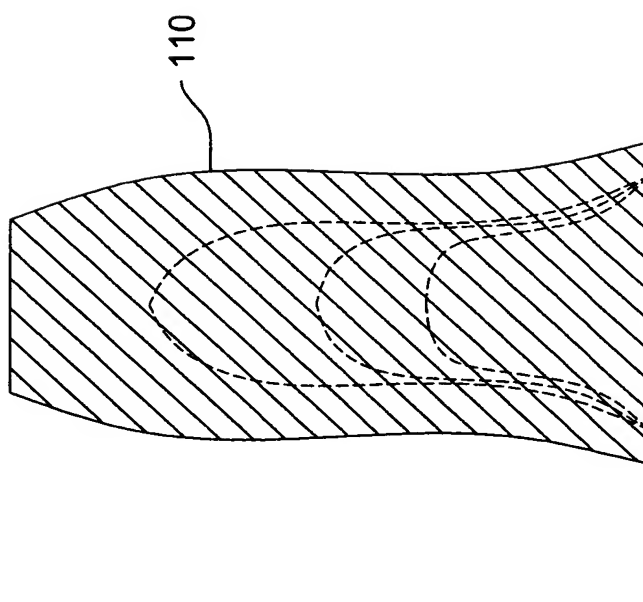


Figure 9

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Comparison of Detection Limits in pg/s (MDL) and Selectivities x 10³(SEL)

element	wavelength, nm	Present work		Ref C (without background correction)		Ref C (with background correction)		Ref A (echelle)		Ref B (with background correction)	
		MDL	SEL	MDL	SEL	MDL	SEL	MDL	SEL	MDL	SEL
N	174.2	7.0	6								
S	180.7	1.7	150								
Hg	184.9	0.1	3000								
C	193.1	0.5								53	
F	177.5	1.5	25								
C	247.9	2.6		2.7							
Si	251.6	7.6	90	9.3	1.6			58	3.9		
P	253.6			3.3	11			4.2	26		
Hg	253.7	0.1	5000	0.6	77			2.0	91		
Br	470.4			33	0.27	67	1.0	20	1.4	38	0.53
Br	478.6	76	19	34	0.60						
Cl	479.5	39	25	43	0.61	86	1.5			32	1.0
Cl	481.0							32	2.4		
H	486.1	2.2		16							
S	545.4	7.2	26	33	0.08	52	4.6	126	0.25	234	0.07
D	656.1	2.5	0.6 ^c	7.4	0.19						
H	656.3	3.0		7.5						37	
F	685.6	40	30	20	0.57	180	11.4	17	3.5	11	0.82
O	777.2	76	25								

Reference A uses peak width at base instead of peak width at half height to determine MDL, and the numbers have been adjusted accordingly for comparison. Reference B uses 1σ instead of peak to peak (6σ) to measure noise for MDL, and their numbers have been adjusted accordingly for comparison. ^cVersus hydrogen.

Figure 10

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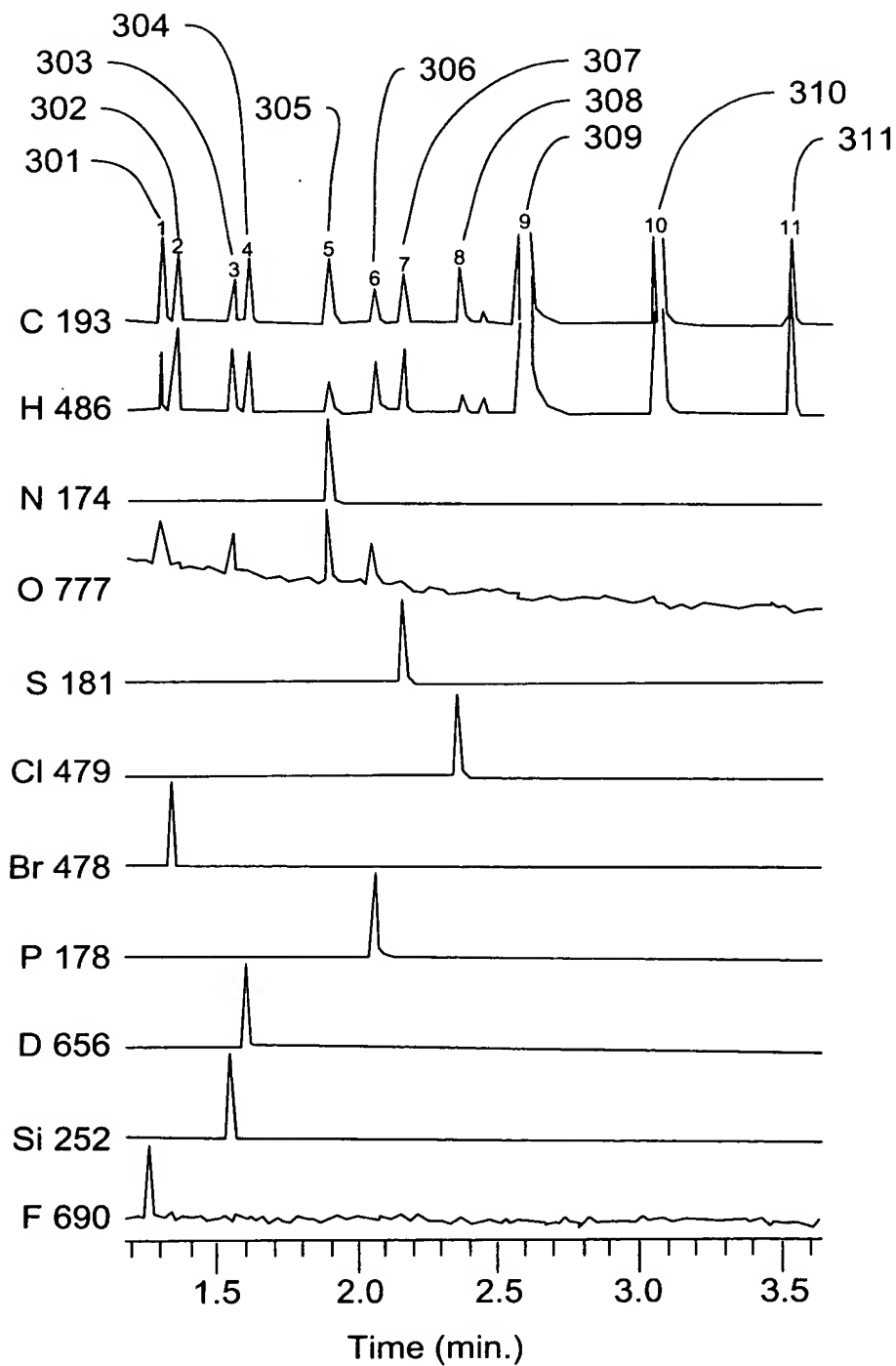


Figure 11

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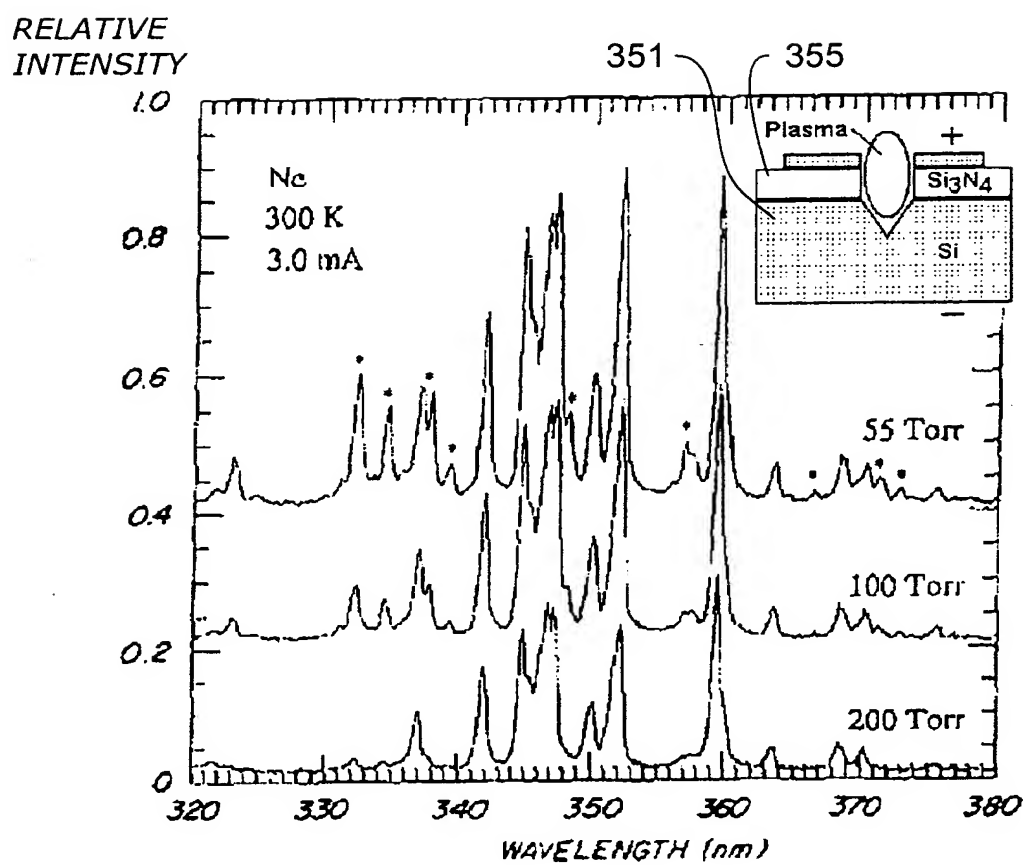


Figure 12

BEST AVAILABLE COPY

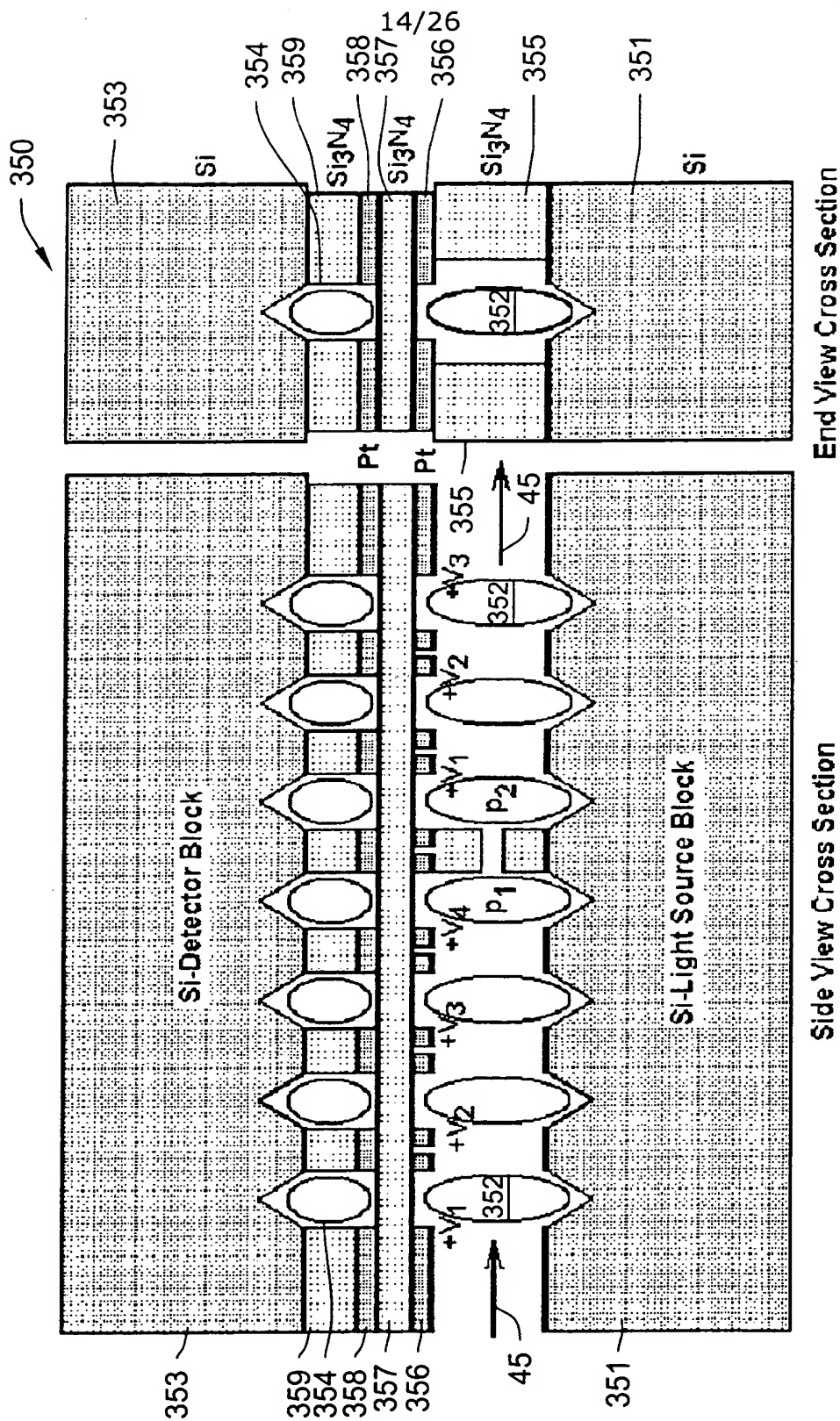


Figure 13

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Photosensitivity
in A/W

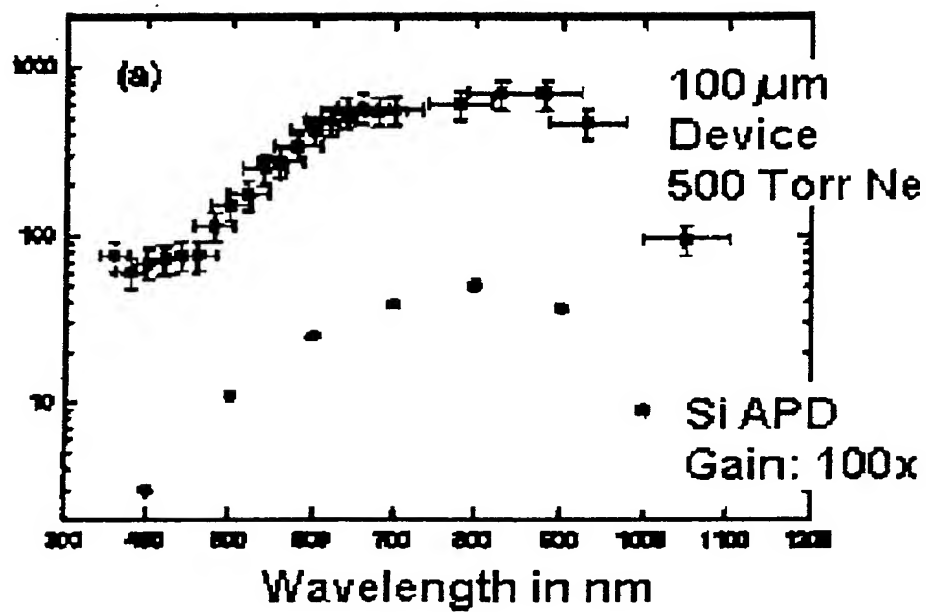


Figure 14

BEST AVAILABLE COPY

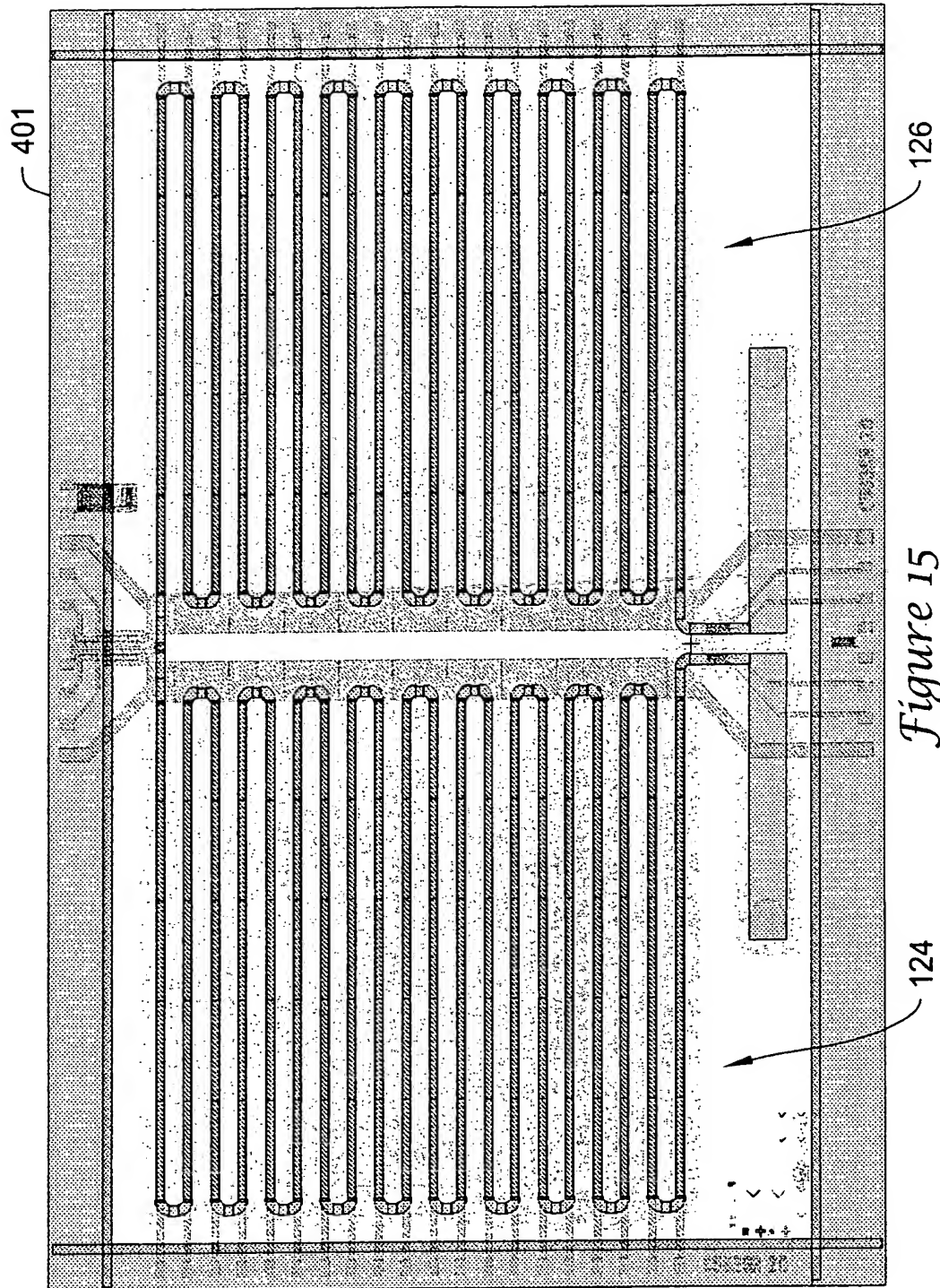


Figure 15

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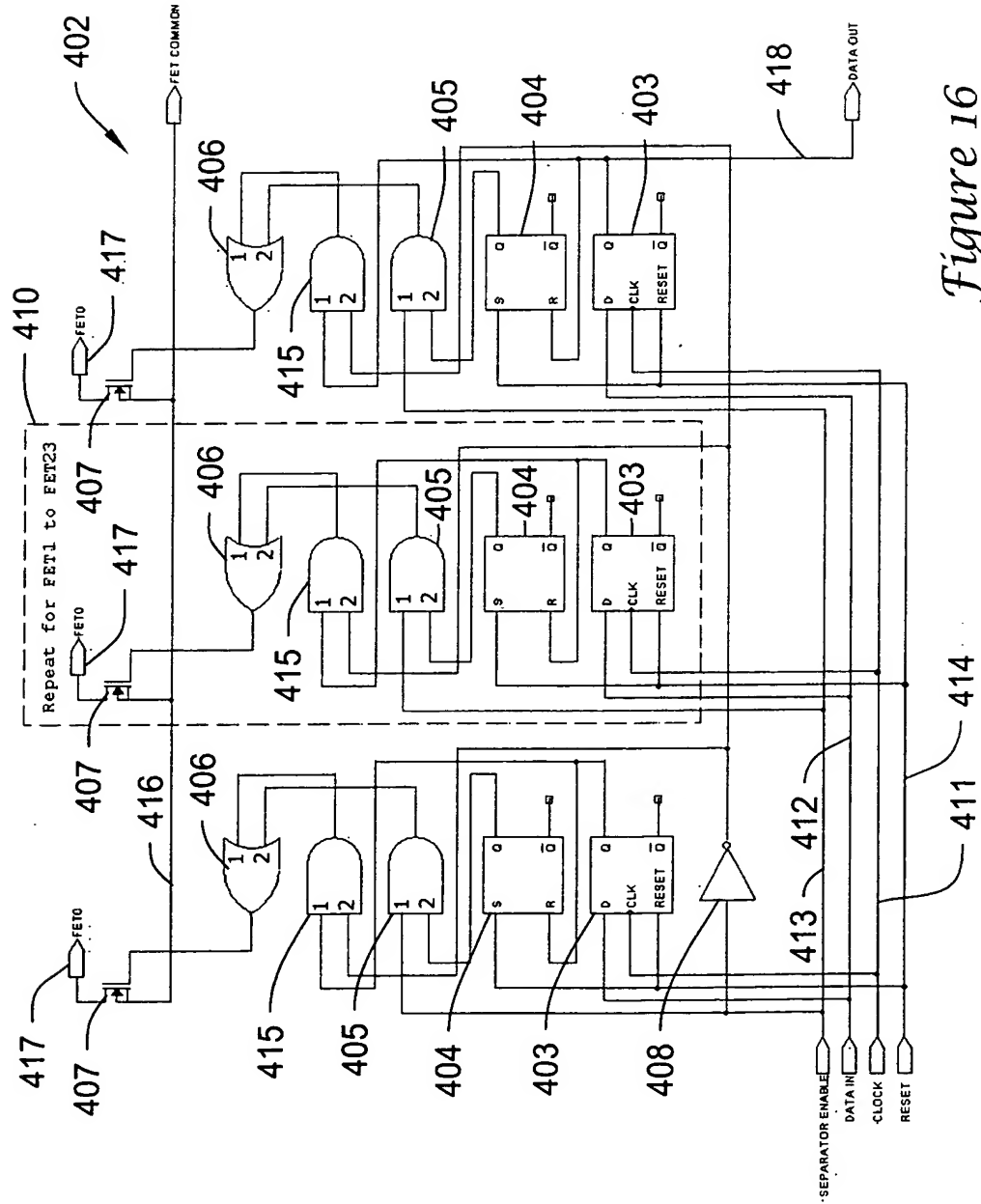


Figure 16

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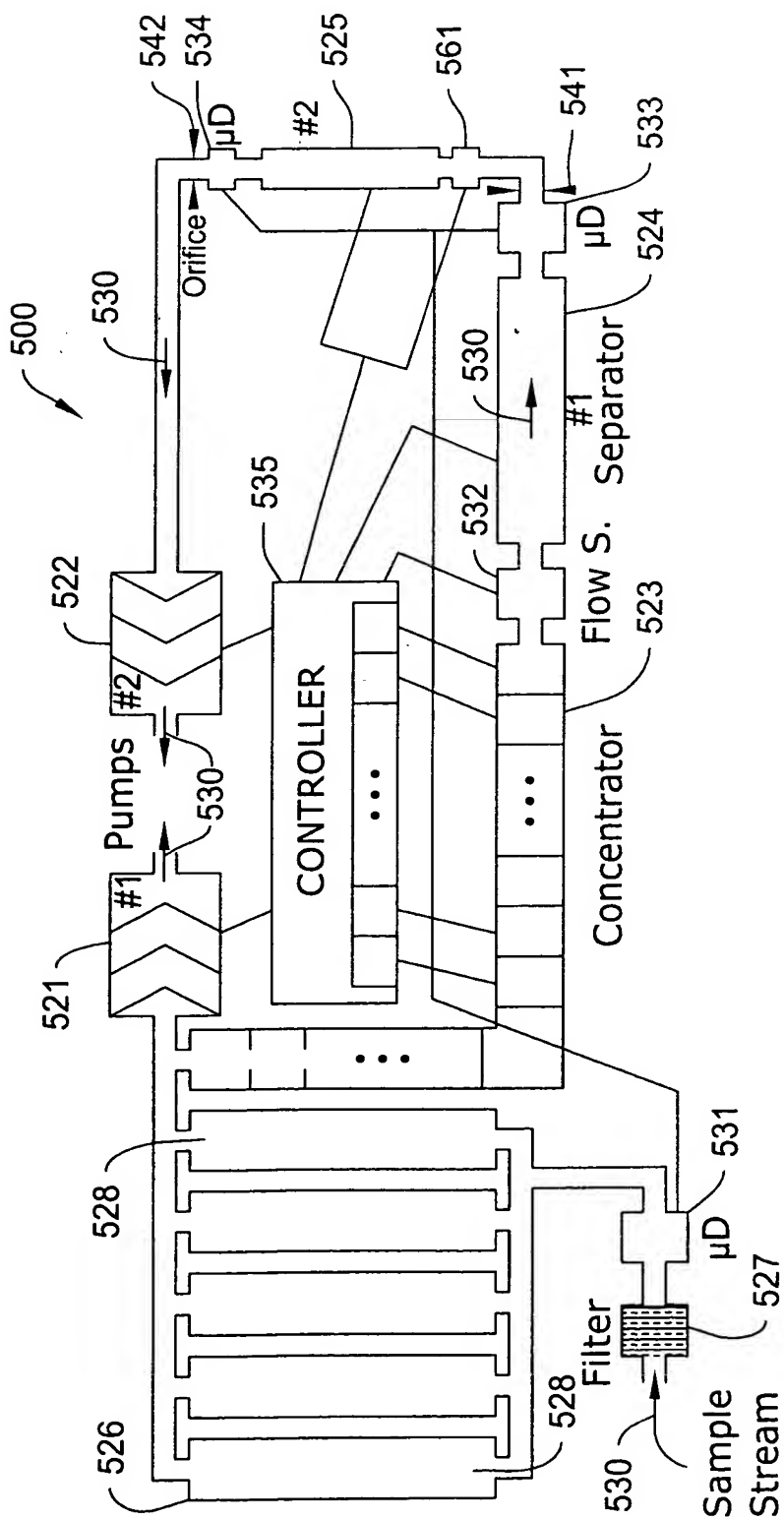


Figure 17

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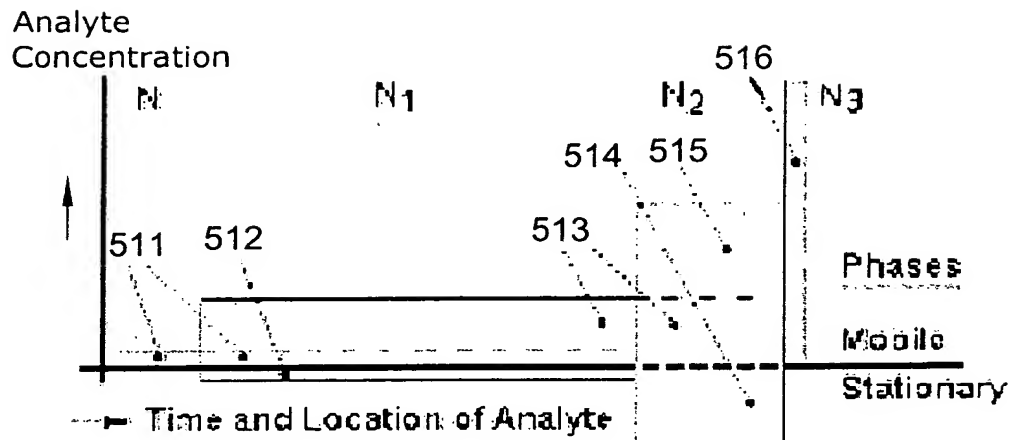


Figure 18

Analyte Masses = Film Length x Concentration				
	N_1 ppt	N_2 ppt	N_3 ppt	N_4 ppt
A	$\infty \times 1$	500×100	$5 \times 10,000$	$1 \times 50,000$
B	$\infty \times 1$	1000×100	$10 \times 10,000$	$1 \times 100,000$
C	$\infty \times 1$	$5,000 \times 100$	$50 \times 10,000$	$1 \times 500,000$
D	$\infty \times 1$	$10,000 \times 100$	$100 \times 10,000$	$1 \times 520,000$ (less)
E	$\infty \times 1$	$100,000 \times 100$	$1,000 \times 10,000$	$10 \times 1,000,000$ (10^7)

Figure 19

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Pres. Drop at 100 cm/s, 100x100 μm

No. of Elem. N1	Length L cm	Pres. Drop Δp psi	Peak P. Q watts
-			
50	0.5	2.629	20.5
505	0.1	5.311	41.3
1010	0.1	10.621	82.6

Figure 20

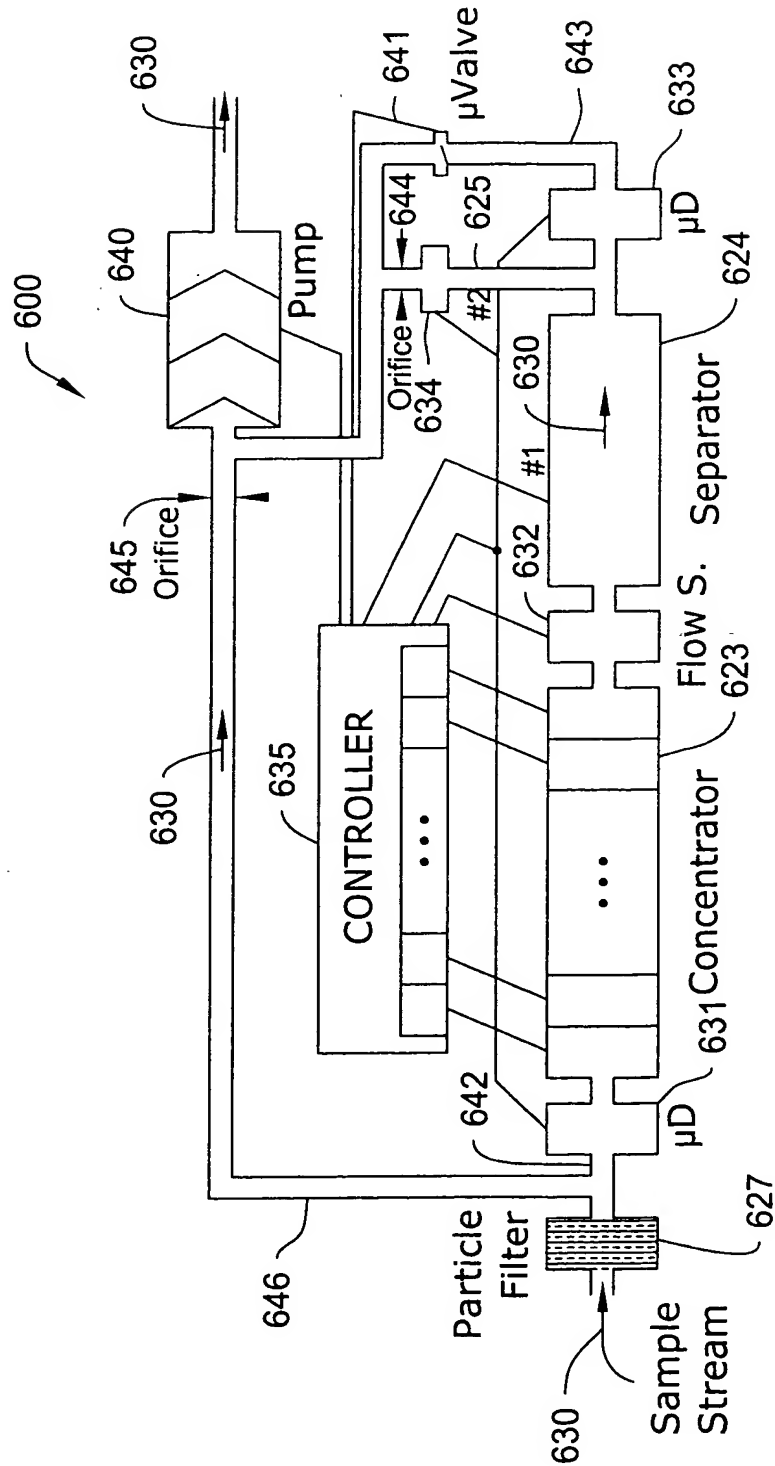


Figure 21

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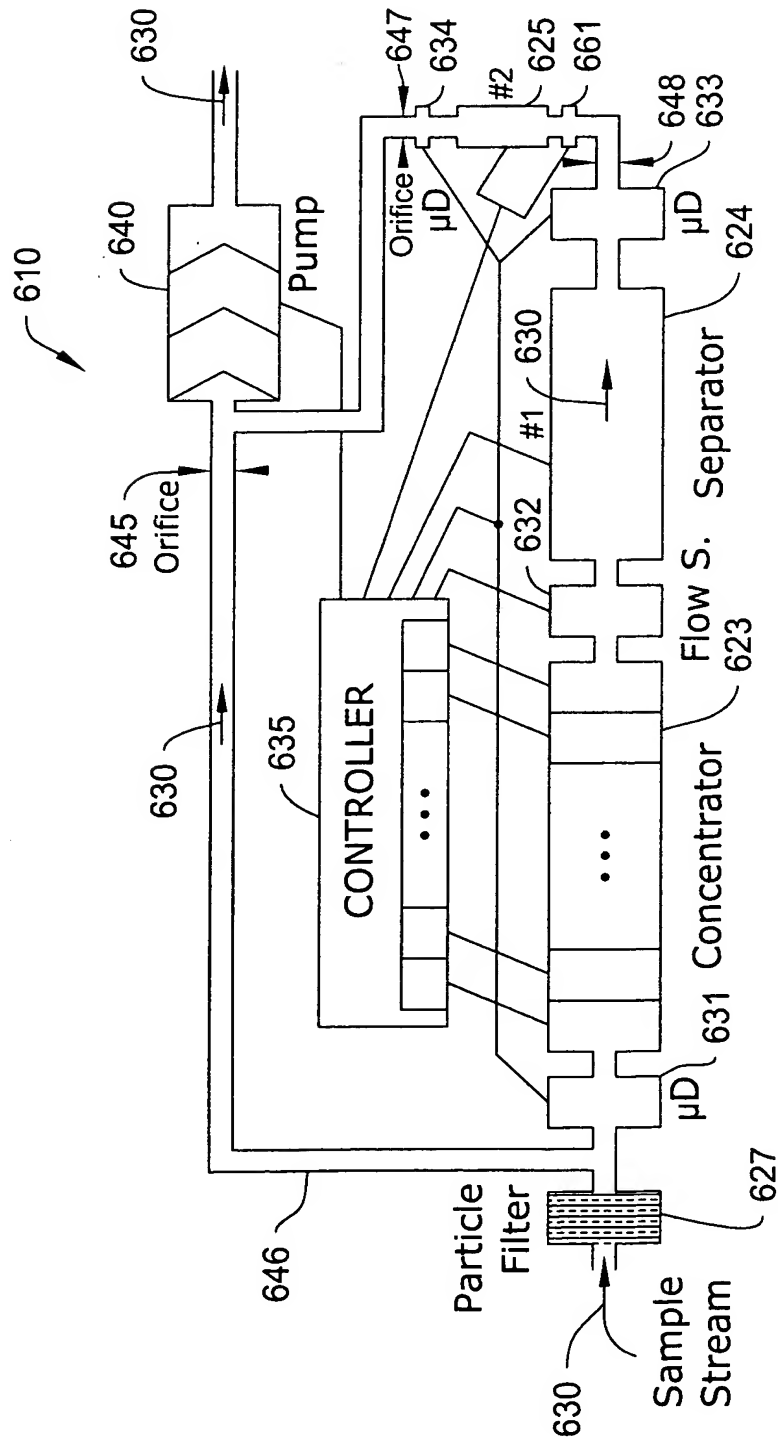


Figure 22

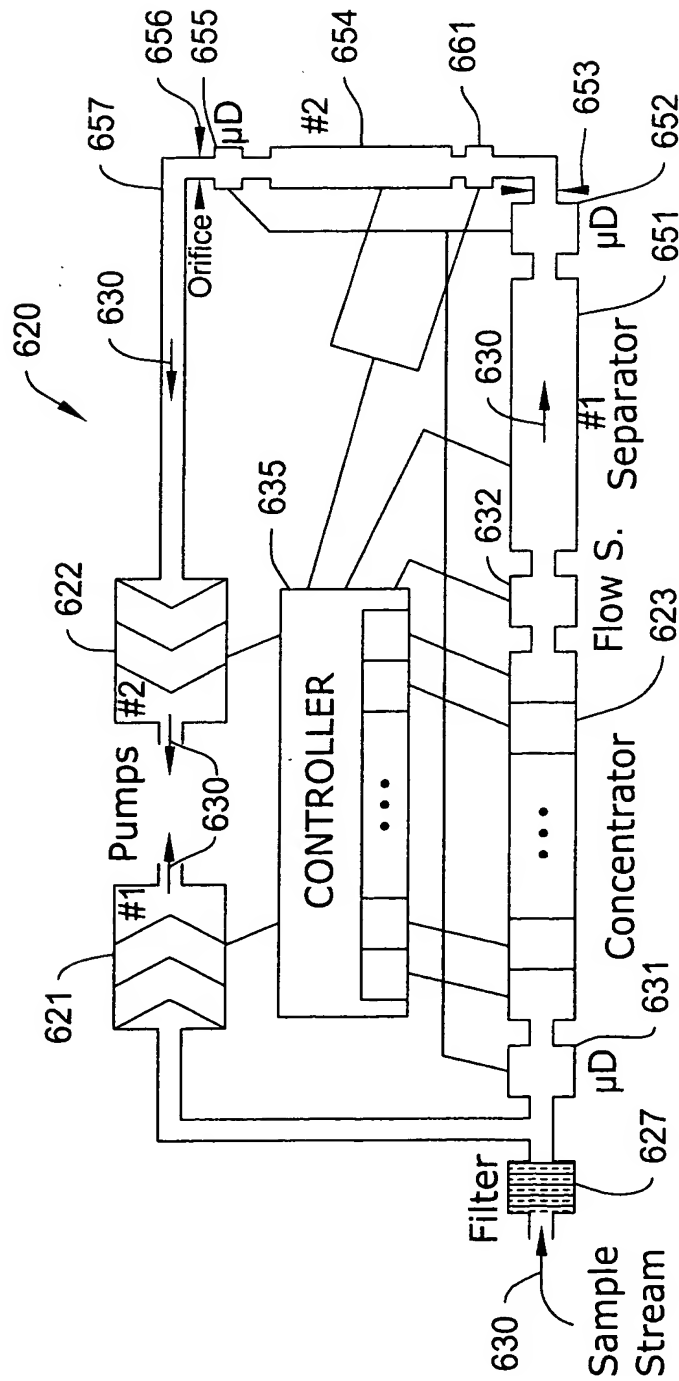


Figure 23

v in cm/s ID in cm L in cm s in μm ℓ in mm V in cm^3/min Δp in psi

	v in cm/s	ID in cm	L in cm	s in μm	ℓ in mm	V in cm ³ /min	Δp in psi
$\mu\text{GC-1}$	50	0.014	25	1	5	0.588	.671
$\mu\text{GC-2}$	250	0.007	10	0.15	2.5	0.588	5.365
Half-Width							
	v	to	Δt	k=6	k=0.2	k=2	k=0.2
	cm/s	ms	ms	tR	v(optimal)	v(optimal)	$\Delta R(v-v_0)$
$\mu\text{GC-1}$	50	500	20	3.00	68.8	56	2.5
$\mu\text{GC-2}$	250	40	2	0.24	149.2	118	6.2
				sec	cm/s	cm/s	%
							R
							-
							8.76
							2.5
							8.00
							6.2

Figure 24

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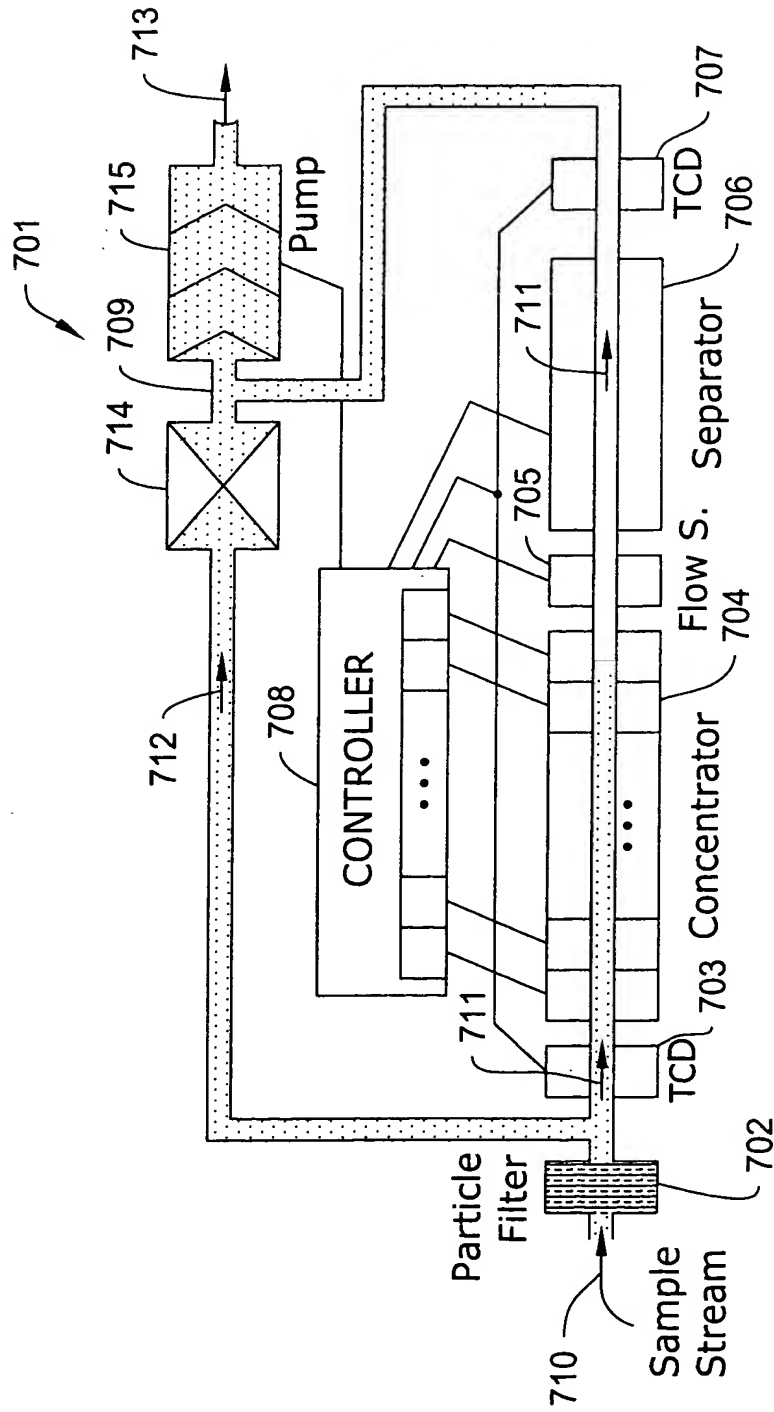


Figure 25

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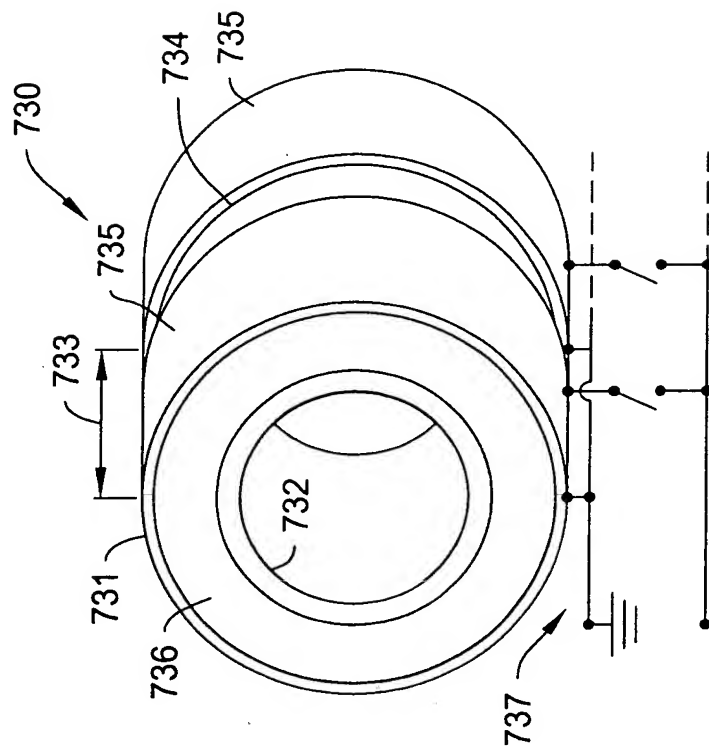


Figure 26B

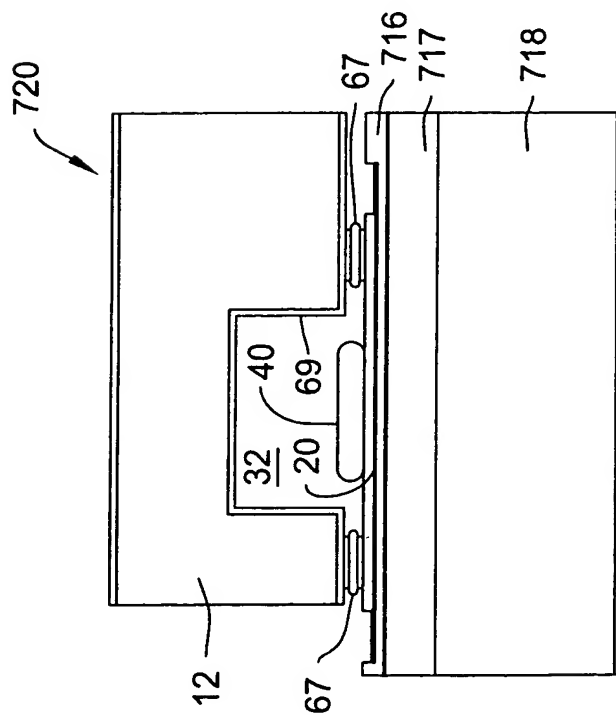


Figure 26A